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METHODS OF SANITIZING EATING AND DRINKING UTENSILS [1]

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Although the knowledge of many factors influencing the efficiency of dishwashing is still incomplete, the present knowledge, if properly applied, is sufficient to bring about a great improvement in its general effectiveness and give a larger measure of protection. The question of disease transmission by eating and drinking utensils is discussed in some detail in the Ordinance and Code Regulating Eating and Drinking Establishments recommended by the Public Health Service (Public Health Bulletin No. 280).

Many persons who have observed conditions in public restaurants will agree that there is need for improvement in dishwashing methods in many communities. The results of some actual bacteriological studies support these observations. Recently a comprehensive survey of the conditions of eating and drinking establishments was made in an eastern city (*1*). Bacterial counts were made of plates, tumblers, spoons, forks, and beer glasses at establishments of different types. The lowest count reported, 2,800, was on spoons at 8 soda fountains. The highest count, 7,000,000, was on beer glasses at 19 barrooms. The next to the highest count, 390,000, was on tumblers at the 8 soda fountains. Each figure is the average "swab count" of 10 utensils. Rabbit blood agar was used for plating. These counts, all of which are greatly in excess of the standard of 100 organisms per utensil surface, show the need for improvement in dishwashing practice in that city.

Recently, mobile laboratory units of the United States Public Health Service have assisted State and local health departments in making swab tests of restaurant utensils in several communities located in different sections of the country. Unpublished reports of this work show clearly that there is need of improvement in dishwashing in most, if not all, of the communities visited.

[1] From the Milk and Food Section, Sanitary Engineering Division.

Studies by Mallmann (*2*) illustrate the improvement which can be made in dishwashing practice by application of present knowledge. Bacterial counts of utensils were made at several restaurants before and after an educational program on dishwashing. In almost all cases the counts were reduced from several thousand to less than 100. In the same article Mallmann gives an interesting tabulation of counts obtained on individual utensils at a large restaurant using a dishwashing machine and operating it properly. These data show an average count of 17 organisms per utensil surface.

Tests have shown that the standard of less than 100 organisms per utensil surface can be maintained by hand dishwashing methods (*3*). Mallmann reports tests in which an average utensil count of 67 was obtained by hand methods over a period of 2 years, as compared with an average of 36 for another series of tests on dishes washed by machine.

The above data and other observations seem to indicate that, on the average, lower bacterial counts are obtained with machine washing than with hand methods. However, the data do not justify the conclusion that manual methods should universally be discarded in favor of dishwashing machines. Satisfactory results can be obtained by either method, and the choice of methods should be made by the restaurant.

The purpose of this paper is to present the existing recommended methods of dishwashing.

DETERGENTS

A good detergent (*4*, *5*) should have the following properties:

1. Wetting: the ability to wet readily the utensil being cleaned.
2. Emulsification: the ability to emulsify the fats from the food soil on the utensils.
3. Dissolving: the ability to dissolve food materials, principally proteins.
4. Deflocculation: the ability to break up dirt particles.
5. Dispersion: the detergent should function properly in hard or soft waters, and preferably should be of a type which will minimize the formation of a film or deposit of mineral salts and similar substances on the utensils and equipment. This property of film-prevention is called dispersion because the products of the chemical reaction between the detergent and the hardness constituents of the water are kept dispersed in the solution and their precipitation, with consequent formation of film, is minimized.
6. Rinsing: the property of being easily rinsed off the utensil by clean water.

No single chemical substance possesses all of these properties to the desired degree; many detergents used for dishwashing are mixtures. For example, one proprietary compound is said to have approximately the following composition (dehydrated basis): 6 percent sodium hydroxide, 18 percent trisodium phosphate, 28 percent sodium metasilicate, and 48 percent sodium hexametaphosphate. Following is a

brief tabulation of the properties of several detergent ingredients (*5, 6, 7, 8, 9*):

1. Sodium hydroxide (lye) is a good dissolving agent but lacks the other properties, and is extremely dangerous to the skin and eyes. In general, the alkalis are ineffective detergents by themselves.

2. Soap is a good simple detergent when used in soft water, although it has no dispersion property and, obviously, its properties of emulsification and deflocculation are limited. The reaction between soap and the hardness constituents of water results in insoluble soap, which leaves a deposit on the utensils and equipment.

3. Sodium carbonate (soda ash) has the properties of the alkalis and is useful as a water softener. The products of the reaction precipitate and form films.

4. Trisodium phosphate has satisfactory emulsifying and deflocculating properties, but its wetting and dispersion properties are insufficient to make it a completely effective detergent for dishwashing. However, it is useful as a water softener.

5. Sodium metasilicate has detergent properties which are similar to those of trisodium phosphate, but it is less corrosive to certain metals.

6. Sodium hexametaphosphate is an effective water-softening agent and has excellent dispersion properties. It forms soluble compounds with the calcium and magnesium hardness-constituents of water, dissolves "lime soaps," and thus acts to prevent the formation of film on utensils and of scale and sludge on sinks and in dishwashing machines. Otherwise, this substance has little detergent property.

7. Tetrasodium pyrophosphate and sodium tetraphosphate have detergent properties similar to those of sodium hexametaphosphate.

8. Various "wetting agents" (sulfated alcohols, for example) have been used by the textile industry as penetrants to improve the penetration of dyes. Recently, these agents, also called "synthetic detergents," which have definite emulsification and deflocculation properties, have been used in dishwashing detergents. The calcium and magnesium salts of sulfated alcohols are soluble; thus objectionable films and precipitates are avoided.

While "wetting agents," or "synthetic detergents," have caused great changes in the detergent field, their utility for certain purposes is limited. Their ability to cause foam or suds is great, and if the washing solution is pumped, as in most dishwashing machines, only a small amount of a wetting agent can be used in the detergent mixture; otherwise a thick blanket of foam will interfere with operation.

9. Other ingredients are often used in detergent compounds. For example, buffering and other substances are used to decrease the violence of the alkaline reaction and to minimize corrosion of metal sinks and dishwashing machines. Inert abrasives are sometimes used but are generally undesirable in dishwashing detergents.

The selection of detergents on a scientific basis is quite complex, and as yet no satisfactory method of evaluating them in simple terms has been devised. Although it is relatively easy to evaluate detergent compounds or ingredients in terms of the six essential properties, the difficulty arises in attempting to combine these individual properties into an over-all efficiency rating. Of course, restaurants may evaluate detergents roughly by observing their apparent effectiveness in actual dishwashing operations, but a scientific, standard technique for such evaluation is needed. The New York State Department of Health and the New York State Agricultural Experiment Station are working on such a test (*5, 10*), and the results are awaited with interest.

The following factors influence the selection and efficiency of detergents: Hardness of the water, equipment to be used, temperature, time of contact, and concentration. A concentration of about 0.3 percent is, in general, the most satisfactory, but the optimum concentration varies with different detergents. It is important that the proper concentration be maintained in the wash water. Among the methods proposed for testing the concentration are: Alkalinity, pH, and electrical conductivity. Other indices are the presence or absence of foam, and the intensity of color caused by a dye mixed with the detergent. None of these methods is entirely satisfactory, and reliance is usually placed upon approximate methods of maintaining the detergent concentration.

HAND DISHWASHING METHODS

The facilities required include a 2- or 3-compartment sink of sufficient size with adequate drainboards, provision for convenient scraping of dishes and disposal of the scrapings, a prerinsing arrangement, baskets for utensils, adequate hot-water heating facilities, a suitable detergent, an intelligent dishwasher, and capable supervision. The illustration on page 26 of the 1943 edition of the Ordinance and Code Regulating Eating and Drinking Establishments shows satisfactory washing facilities.

The dishes should be scraped well to remove gross food particles, preferably should be prerinsed, and sorted. The wash water should contain a sufficient quantity of a suitable detergent and should be heated to 110° to 120° F., which is about as hot as the hands can stand. An ample amount of "elbow grease" must be used. The washed utensils should then be stacked in a basket and placed in the second compartment of the sink.

As washing continues, the water temperature drops, the water becomes laden with bacteria, food particles, grease, etc., and the soap or other detergent becomes weaker. The dishwasher must, therefore, add detergent from time to time, keep the water hot, and change the water before it becomes too dirty. Scraping and prerinsing of utensils help to keep the wash water clean and reduce the consumption of detergent.

The restaurant ordinance and code recommended by the Public Health Service requires that the dishes be given bactericidal treatment after washing. This may be done by immersion in hot water or a chlorine solution, or by other methods. Glasses and cups should be immersed in such a position as to prevent the formation of air pockets, which will prevent the hot water or chlorine solution from reaching all surfaces of the utensils. Glasses and cups may be placed on their sides or some other method may be used to insure that they will not trap air.

If hot water is used, the baskets of washed dishes are submerged in

hot water (at least 170° F.) in the second compartment of the sink for at least 2 minutes. The baskets must, of course, have long handles extending well above the water level in the sink. Both rinsing and bactericidal treatment are accomplished in the second compartment of the sink by this method, which constitutes compliance with the minimum requirements of the code. It is recommended, however, that a 3-compartment sink be used, so that the utensils may be rinsed in warm water in the second compartment before being placed in the hot water in the last compartment.

It is important that the water temperature in the "sterilizing" compartment be maintained above 170° F. This may be done by suitable water heating facilities, as, for example, by thermostatically controlled heating elements in the bottom of the vat. An interesting device developed some time ago in Lenoir, N. C., consists of an insulated sink provided with a metal cover and a thermometer, which is connected by 1" piping to a "side-arm" type of water heater using gas or kerosene. The burner is kept on throughout the dishwashing operation, and the water, which circulates through the 1" pipes to the sink and back to the heater, is kept above 170° F. by adjusting the burner according to the thermometer reading. Information is not available as to whether or not this device has been patented.

If chlorine is used for bactericidal treatment, a 3-compartment sink is mandatory, with the exception of installations already existing when the ordinance is adopted locally. In this event, the second or rinsing section may be omitted if a satisfactory rinsing or spraying device is substituted. An effective rinse after washing and before immersion in a chlorine solution is necessary because chlorine is depleted rapidly by organic matter and detergent carried over from the wash vat. Immersion for at least 2 minutes is required if the minimum strength of the chlorine is equivalent to that of 50 p. p. m. of available chlorine when hypochlorites are used. The chlorine solution should be made up at a strength of 100 p. p. m. or more.

After bactericidal treatment, the utensils should be allowed to drain and dry, and should be stored inverted in a clean, dry place. If properly washed dishes are stored in a wet or moist condition, the few remaining bacteria may live and multiply. Where treatment is by hot water, the residual heat promotes quick air drying. If chlorine is used, the utensils may be rinsed in clean running water if desired in order to remove the chlorine odor. Although it is not recommended that utensils be dried with a towel, this is not prohibited by the code. In some hard-water sections toweling is necessary to prevent water spots. The important point is to avoid the use of dirty towels; it has been shown that such towels may add many bacteria to utensils (*3*).

Reports of recent work and experience with alkyl-dimethyl-benzyl-ammonium chlorides indicate that this compound may have much to

recommend it as a chemical bactericidal agent for use in a manner similar to chlorine. It is said to be much easier to maintain the strength of this substance in the rinse water, and it does not have any objectionable taste or odor in the concentrations used.

The use of ultraviolet lamps for the disinfection of eating and drinking utensils has not been accepted widely by health authorities. The Council on Physical Therapy of the American Medical Association has stated that available evidence does not warrant acceptance of ultraviolet lamps for disinfecting solids. According to the Council, the entire subject is too new, too complex, and apparently too uncertain where virulent germs, such as the typhoid organism, may be involved in spreading epidemics (*11*).

MACHINE DISHWASHING METHODS

The manner in which the two objectives of dishwashing—cleaning and removal of harmful bacteria—may be accomplished by machines can be discussed more clearly after a brief consideration of the mechanical features of several types of machines. Figures 1 to 7 present

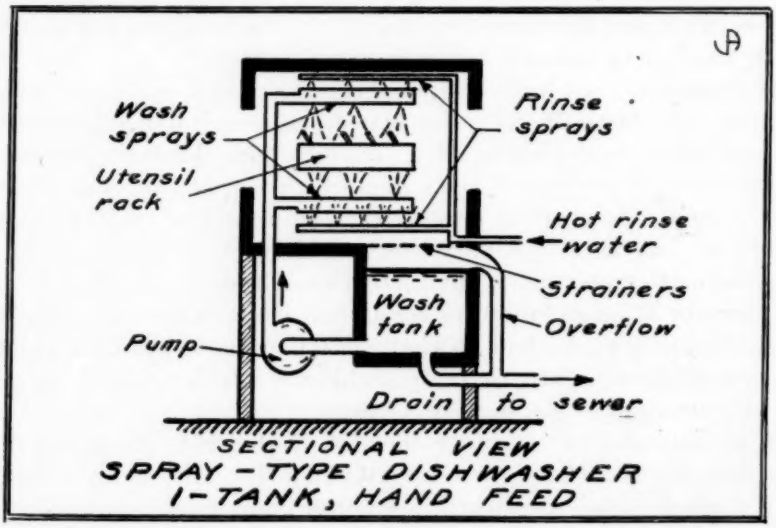

FIGURE 1.

sectional views of several machines. These sketches are not detailed scale drawings and do not show all the parts of the machines. Wash, rinse, and outlet valves, heating elements, and other parts have been omitted in order that the basic principles of operation might be shown more clearly.

Figure 1 is a single-tank, intermittent-operation, spray-type dishwasher. Such machines are frequently used in smaller establishments. The water in the wash tank is heated to the proper temperature by a built-in electric, steam, or gas heater. The detergent is added directly

to the wash tank at the start of operations, and is replenished during the operation by any one of several methods. A single rack of utensils is placed in the machine in the position shown, the sliding doors are closed, and the pump is started. Wash water is discharged onto the utensils from the wash sprays located above and below the utensil rack. The spent wash water flows back into the wash tank through removable strainers or scrap trays, which retain the larger food particles and reduce clogging of the spray nozzles. At the end of the wash period, the wash water sprays are turned off and clean hot water direct from the building hot-water system is sprayed onto the utensils from sprays located above and below the utensil rack. After rinsing, the rack of utensils is removed and another may be placed in the machine.

Figure 2 is a single-tank machine of similar construction but has the wash sprays and the rinse sprays at separate locations, so that racks of utensils may be passed continuously through the machine.

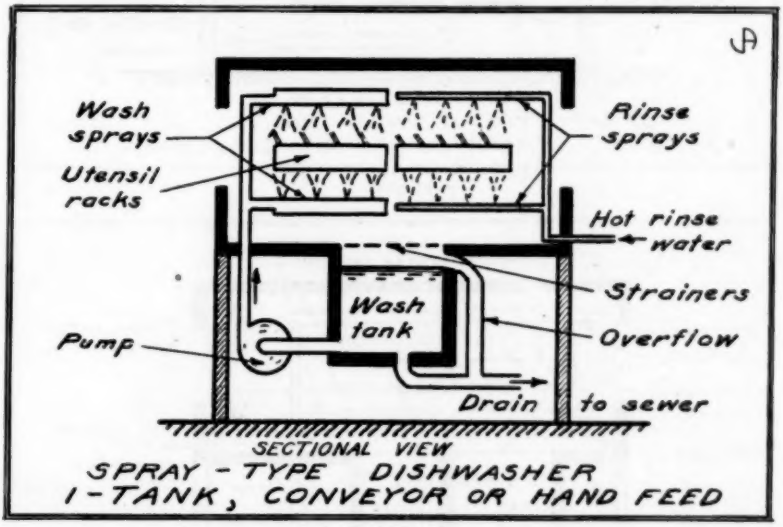

FIGURE 2.

With both of these types of machines, operating difficulties may result because the hot rinse water flows back into the wash tank. This may raise the temperature of the wash water sufficiently to cause the food solids to become "cooked" onto the utensils. For most effective removal of soil, the wash water temperature should be in the range of 120°–140° F. The top limit varies somewhat, because different foods tend to "cook" onto the utensils at different temperatures. However, it is believed desirable to maintain the wash water at as high a temperature as possible, but not over 140° F. The inflow of rinse water also dilutes the detergent and may cause excessively rapid wasting, especially if additional dilution is provided by leaky valves or connections. Rapid dilution of the detergent may be com-

pensated, of course, by the addition of more detergent. The prospective purchaser should give consideration to the probable detergent consumption before deciding which machine to buy.

Figure 3 is a machine quite similar to that in figure 2 but has a

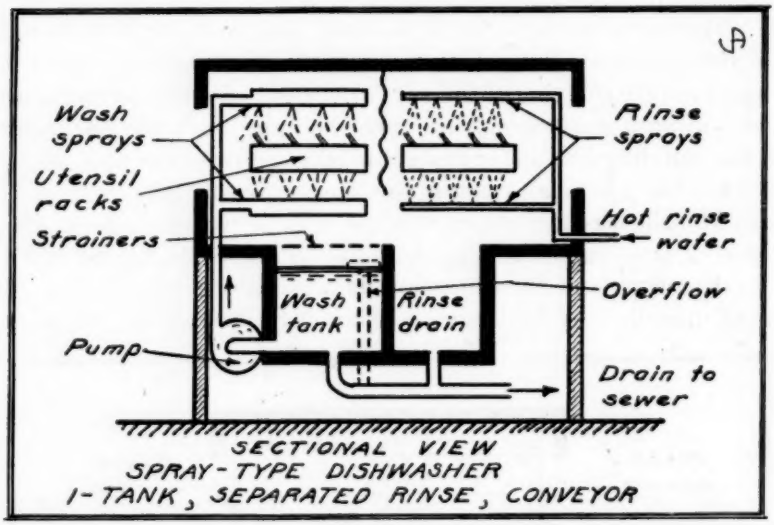

FIGURE 3.

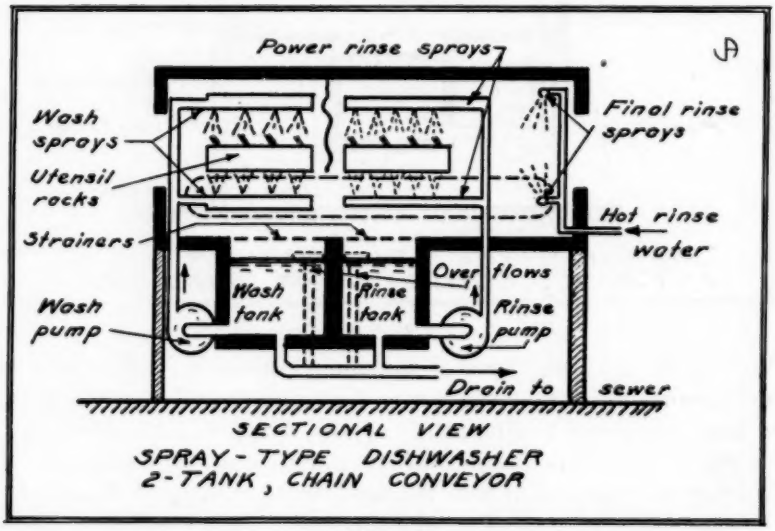

FIGURE 4.

separate means of collecting the rinse water, thus avoiding the excessive heating and dilution mentioned above.

Figure 4 is a 2-tank spray machine having a recirculated rinse before the final fresh-water rinse. This machine should be more economical in its use of hot water from the building system, because the length of

the final rinse can be considerably shorter than in the first three machines.

Figure 5 is one type of glasswashing machine. Glasses are inverted in specially designed wire racks and set in position on the movable carriage over the wash tank. When the operating lever is depressed, the rack of glasses is submerged in the wash water, and revolving brushes scrub the inside and outside surfaces. Additional brushes clean the bottoms. After washing, the carriage is rolled to a position over the rinse tank, and the lever is depressed again. This submerges the glasses in the rinse water in such a position that the recirculated rinse water issuing from the nozzles first reaches the inside surfaces of the glasses. The water in the rinse tank is kept clean by a steady inflow of clean, hot water. After rinsing, the glasses are dried by the fan.

Figure 6 is an immersion-type dishwasher having a motor-driven mechanism which moves a rack of dirty dishes back and forth in the

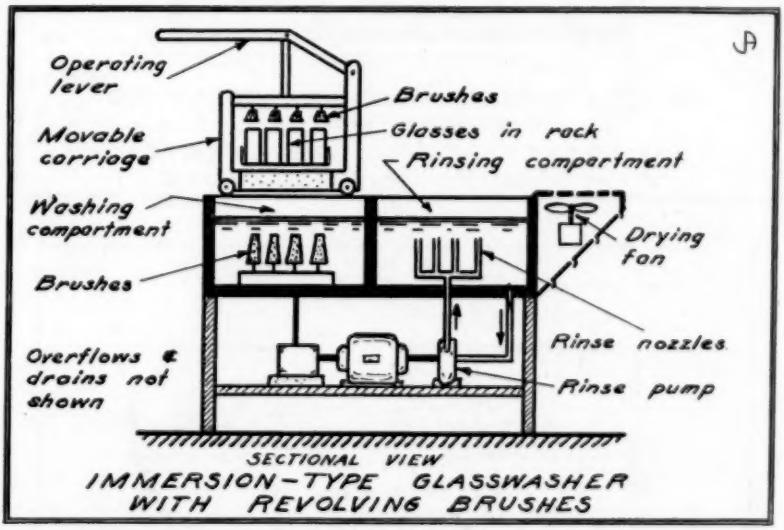

FIGURE 5.

wash water. Following washing, the utensils are given bactericidal treatment in the second compartment of the sink.

Figure 7 is a paddle-type dishwasher which has no pump, sprays, or jets. The wash water is driven onto the utensils by small paddle wheels. This particular model has a separated rinse collection system and in this respect is similar to figure 3.

There are a number of other types of glasswashers and dishwashers. Some of the larger dishwashing machines have more than 2 tanks, and may include 2 washes and 1 recirculated rinse, for example. Recently prerinsing devices have been developed to provide better removal of soil from the dishes before they are placed in the regular dishwashing machine. Glass washers commonly include brushes. It is the gen-

eral opinion that brushing is necessary in order to clean glasses properly.

Several features of dishwasher design are suggested although not specifically required by the Public Health Service restaurant code. The pumps and the sprays or jets should be of such design that a forceful stream of water will reach all surfaces of all utensils when they

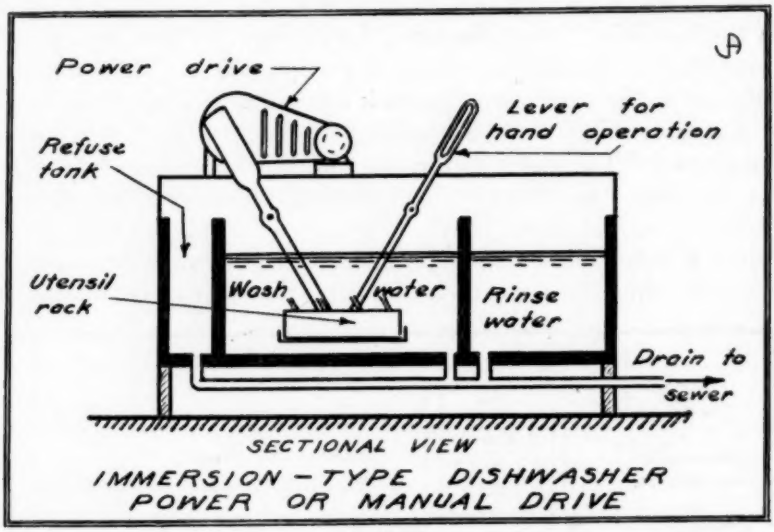

FIGURE 6.

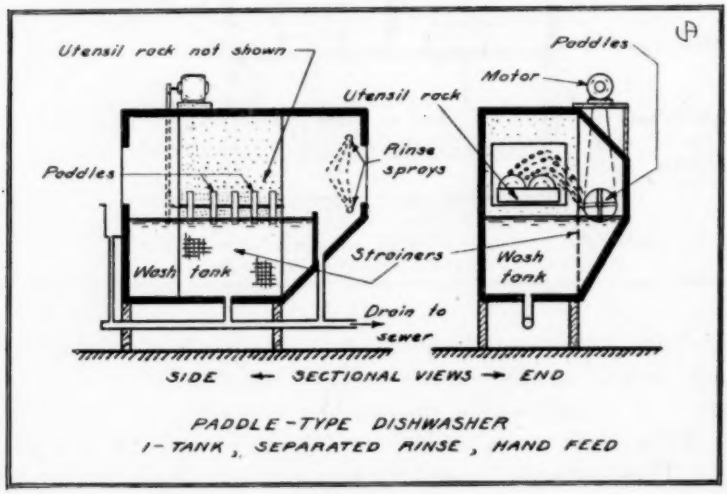

FIGURE 7.

are properly racked. Sprays or jets should be easily accessible and readily removable for cleaning. The temperature of the wash and rinse waters should be thermostatically controlled, and thermometers should be provided on the wash and rinse lines in such a location as to be readily visible. Properly operating automatic detergent dispensers are also recommended.

machine. Glass washers commonly include brushes. It is the gen-

ADDITIONAL FACTORS INFLUENCING EFFICIENCY OF MACHINES

1. Length of washing period. Obviously, long washing periods are more effective than short ones, since detergent action, like other chemical reactions, requires time for completion. Acceptable results may be obtained with wash periods of at least 40 seconds to 1 minute.

2. Temperature and duration of rinse. Acceptable results may be achieved with water at 170° F. or higher, and with a rinse of at least 15 to 30 seconds. It is assumed that such a rinse will have been preceded by an adequate wash.

These wash and rinse periods and temperatures are not mandatory in the recommended restaurant code, because it is felt that the knowledge of the many factors influencing the process is not yet complete enough to warrant making such specifications a part of the legal requirements. Consequently, the temperatures and times given should be used as guides rather than as rigid specifications, in order to furnish some definite recommendations to restaurateurs. For purposes of very rough comparisons, dishwashing machine exposures may be compared with high-temperature short-time pasteurization of milk, in which milk-borne pathogens are inactivated by heating the milk to 160° F. and holding at that temperature for at least 15 seconds. Such a comparison is misleading, however, unless it is clearly recognized that exposure of dishes and other utensils to a stream of hot water at 160° F. for 15 seconds will not cause their surfaces to be at this temperature for the full 15 seconds. Actually, some time is required to raise the temperature of the utensil; consequently a more intense heat treatment must be used for dishes than for milk.

3. The "rush hour" problem. It has been observed frequently that the person operating a dishwashing machine may follow the recommended procedure when he has time, but that during rush hours he will rush the dishes through the machine too rapidly to give proper washing and rinsing. For example, observations at one large cafeteria during the noon rush showed that for a group of 10 consecutive racks of dishes washed, 1 rack was in the machine for only 20 seconds, 4 for 30 seconds, 3 for 45 seconds, and 2 for 60 seconds (*10*). Obviously the shorter exposures are inadequate. One solution of this serious problem is to encourage the restaurant to have in use a large enough supply of utensils to tide over the rush period without having to make the dishwashing operation only a pretense. In the future, it would be desirable to design all dishwashing machines so that utensils cannot be rushed through faster than the predetermined, proper rate.

4. Rate of dilution of wash water. As has already been pointed out, the wash water in single-tank machines is diluted considerably by the hot rinse water. Some such dilution is desirable in order to keep the wash water fairly clean, to flush floating material into the overflow, and to restrict the increase of the bacteria count of the

are also recommended.

wash water. With improper operation the count of the wash water may increase to such a point that more organisms are added to the utensils during washing than are removed. Excessive dilution is objectionable, however, and this can be reduced in some machines (such as the type shown in fig. 2) by installing a catchpan connected to the overflow which will discharge most of the rinse water to the sewer. The rate of dilution of the wash water is largely determined by the design of the machine.

5. Method of adding the detergent. Continuous addition at a rate controlled automatically by the strength of detergent in the wash water is the ideal method. The simplest method is to make an initial charge of detergent when the wash tank is first filled, and to add charges at regular intervals during the operation. For example, one detergent manufacturer recommends, for water of 5-grain hardness or less, an initial charge of 1 ounce of detergent for each 5 gallons of wash tank capacity. For single-tank machines, one-third the initial charge is added after each 20 minutes of operation, while with multiple-tank machines, these additions are made after each hour of operating time.

Several types of automatic detergent dispensers are made. In some types, the detergent powder or cake is placed in a small cylindrical container and small quantities are dissolved periodically by wash or rinse water flowing over the container or by water from a bleeder line from the rinse system. In other types, the detergent is dissolved in water in a container on top of the dishwashing machine and the flow of the solution into the wash tank is controlled by a simple petcock or an adjustable regulating cup.

6. Method of racking utensils. The utensils must be placed in the racks without overcrowding, in order that the wash and rinse waters may reach all surfaces of every utensil. Dishes, saucers, etc., should not be nested or overlapped but should lean back slightly so that the surfaces touched by food will receive the spray from above. Utensils of different sizes should not be mixed, and cups and glasses should be inverted so they will drain. Cups should never be placed on top of a rack of saucers or plates.

7. Clogging of sprays or nozzles. Food particles will accumulate and eventually clog wash sprays or nozzles unless they are cleaned frequently. Daily removal for cleaning may sometimes be required, and it is essential that a regular schedule for cleaning be established. Rinse sprays may also become clogged, and they should be checked and cleaned frequently. The strainers or refuse trays above the wash tank should be kept clean, and the whole interior of the machine should be left clean at the end of each dishwashing period. At this time the machine should be emptied and the interior scrubbed, hosed,

or flushed with clean, hot water. The used wash and rinse waters should not be allowed to stand in the tanks and cool off, as grease and food solids will then adhere to the cmahine.

8. Adequacy of the supply of hot water. The temperature of the recirculated wash and rinse waters may be maintained by the integral heating devices in the tanks, but the building hot-water system must be able to supply a sufficient quantity of water at 170° F. for the final rinse. Since relatively few general hot-water supply systems for buildings can comply with these requirements, booster heaters usually must be provided. The design of such systems merits special attention by the firm making the installation. Frequently it is found that an adequate supply of hot water is available at the start of the dishwashing operation, but that the temperature drops a great deal before the operation is finished. In one instance it was found that the water line from the heater to the machine was so long and contained so much cooling surface that only water which had been cooling in the pipe line for some time actually reached the rinse sprays (*10*). The water temperature, as a result, was inadequate.

9. Defects of some dishwashing machines. Studies (*10*) indicate that there is room for improvement in the design of dishwashing machines. These include design changes which would make it easier to clean the tanks, pumps, and piping; improved valve design and location; better protection against back-siphonage; and prevention of backflow from sewers or wastelines into the wash or rinse tanks.

Dishwashing machines have been discussed in some detail because an understanding of their principles is essential to proper operation. It should be repeated, however, that the knowledge of many factors that affect their sanitary efficiency is still incomplete, and that the recommended restaurant code does not yet include detailed specifications covering their design and operation. In lieu of such specifications, the code requires that the bacterial count of the finished utensils shall not exceed 100 organisms per utensil surface examined, where bacteriological laboratory facilities are available.

OPERATION, SUPERVISION, AND TESTS

Frequently the person doing the dishwashing has not been instructed in the proper dishwashing technique, and has not been impressed with the importance of his job. Good equipment or machinery is worthless if it is improperly operated. This is also true of dishwashing machines. Proper training and the creation of job pride will partially solve this problem. The dishwasher should be made to feel that his job is important.

Vigilant inspection is necessary to determine if utensils have been properly cleaned. To emphasize to the restaurant personnel that unclean utensils have been found, some restaurant sanitarians dust

powdered charcoal onto the utensils. The black dust adheres to the soiled spots. Others use a viewing device to inspect drinking glasses. A glass is placed in the device so that its rim is illuminated by a flashlight bulb, and the rim is viewed through a magnifying glass. This makes it easier to see grease spots, fingerprints, or traces of lipstick.

A bacteriological test to determine the sterility of utensils which have gone through the dishwashing process is widely used. This involves counting the total number of bacteria removed from utensils by sterile, moist cotton swabs. If a large number of organisms are found, it is likely that dishwashing has been done poorly and that harmful bacteria, if originally present, may have survived. If only a few organisms are present, it is probable that dishwashing has been done properly and that pathogens are absent. The method is not perfect, because it does not distinguish between harmful and harmless organisms, but it is practical and of great value. Experience has shown that utensils yielding standard swab counts of more than 100 bacteria may be considered improperly washed. Health departments may reasonably require that properly cleaned utensils shall not exceed this average count.

Another test, which is still in the experimental stage (*12*), establishes the presence of a suitable index organism—a bacterium always present in the human mouth and which does not survive proper dishwashing operations.

CONCLUSION

Although many health departments and restaurants have done excellent work, definite improvement in restaurant sanitation has been needed in many American communities for a number of years. Since the outbreak of war, the problem of maintaining good sanitation in restaurants has been intensified by shortages of manpower and materials, increased customer loads, and reductions of health department personnel. There are indications that the amount of disease spread in restaurants is increasing (*13*, *14*). To cope with this situation, health departments must redouble their efforts and increase the efficiency of their programs.

Close, intelligent, and continual cooperation between health authorities and the owners, managers, and employees of restaurants is essential to a successful program. Experience shows that health authorities will achieve the most permanent results by education rather than policing. Restaurant personnel, like all other people, are much more likely to use approved methods if the inspector explains the reasons rather than cites the penalties. Properly organized training courses for restaurant employees probably will do more than any other one measure to promote cooperation and adoption of approved methods. Since dishwashing is an important part of restaurant sanitation, the training course should include adequate treat-

ment of the subject. It is hoped that this paper and the references given may prove useful as a technical guide in the preparation of such courses.

The restaurant sanitation program recommended by the Public Health Service (*15*) offers much of value to health officers who desire to improve their programs or who have hesitated to institute such programs because of uncertainty that the importance justifies the cost. Since restaurant sanitation is an important public health activity to which wartime conditions have given a new urgency, the Public Health Service has expanded its activities and services in this field.

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(*14*) Health of the United States at war. Pub. Health Rep., **58:** 1281–1282 (Aug. 20, 1943).

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DEATHS DURING WEEK ENDED AUGUST 12, 1944

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Aug. 12, 1944	Corresponding week, 1943
Data for 93 large cities of the United States:		
Total deaths	8,150	8,028
Average for 3 prior years	7,591	
Total deaths, first 32 weeks of year	296,173	302,958
Deaths under 1 year of age	591	630
Average for 3 prior years	569	
Deaths under 1 year of age, first 32 weeks of year	19,809	21,558
Data from industrial insurance companies:		
Policies in force	66,695,383	65,727,142
Number of death claims	12,456	10,596
Death claims per 1,000 policies in force, annual rate	9.8	8.4
Death claims per 1,000 policies, first 32 weeks of year, annual rate	10.3	10.1

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED AUGUST 19, 1944

Summary

A larger numerical increase was reported in the incidence of poliomyelitis during the current week than in any other week this year. A total of 1,260 cases was reported, as compared with 1,015 for the preceding week and 932 for the next earlier week. The total to date is 6,259 cases, as compared with 4,058 for the same period last year.

Cases were reported during the week in all but five States—Rhode Island, South Dakota, Idaho, New Mexico, and Nevada; but cases have been reported during the year in all States. The following States reported 20 or more cases during the current week (last week's figures in parentheses): New York 469 (356), Pennsylvania 108 (72), Ohio 92 (57), Virginia 66 (35), Michigan 55 (53), North Carolina 48 (61), Minnesota 38 (24), Kentucky 35 (47), Illinois 34 (27), Massachusetts 30 (23), Maryland 30 (26), New Jersey 24 (21), Indiana 23 (33). States reporting the largest numbers of cases to date are New York (1,729), North Carolina (573), Pennsylvania (464), and Kentucky (459).

The peak week of incidence of poliomyelitis last year was the week ended September 18, and for 1942, the week ended September 12.

Only one case of smallpox (in Georgia) was reported during the week. The cumulative incidence of both smallpox and typhoid fever is below that for last year, in which year the lowest figures on record for each of these diseases were reported.

Of 230 cases of endemic typhus fever reported during the week, 73 occurred in Texas, 43 in Georgia, 34 in Alabama, 26 in Florida, and 25 in North Carolina. To date a total of 2,729 cases has been reported, as compared with 2,202 for the same period last year.

A total of 8,657 deaths was reported during the week in 93 large cities, as compared with 8,223 last week and a 3-year (1941–43) average of 7,494. The recent increase in these mortality figures is probably due, at least in part, to the prevailing high temperatures.

Telegraphic morbidity reports from State health officers for the week ended August 19, 1944, and comparison with corresponding week of 1943 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43
	Aug. 19, 1944	Aug. 21, 1943		Aug. 19, 1944	Aug. 21, 1943		Aug. 19, 1944	Aug. 21, 1943		Aug. 19, 1944	Aug. 21, 1943	
NEW ENGLAND												
Maine	0	0	0	----	----	----	24	8	15	0	3	0
New Hampshire	0	0	0	----	----	----	7	3	0	3	1	0
Vermont	0	0	0	----	----	----	0	25	12	0	0	0
Massachusetts	1	0	2	----	----	----	43	55	65	8	6	1
Rhode Island	0	0	0	----	----	----	1	12	11	1	1	0
Connecticut	0	0	0	----	----	----	3	15	15	1	1	0
MIDDLE ATLANTIC												
New York	5	8	8	[1] 2	[1] 2	[1] 6	67	258	134	23	32	7
New Jersey	1	1	2	----	1	2	23	74	45	7	3	1
Pennsylvania	3	7	6	3	----	----	17	35	35	15	6	3
EAST NORTH CENTRAL												
Ohio	7	6	3	6	2	2	9	69	16	7	6	0
Indiana	2	12	6	3	3	3	2	9	7	2	1	0
Illinois	6	13	13	1	4	2	16	49	27	9	10	1
Michigan [2]	6	4	4	1	----	1	15	251	39	4	9	1
Wisconsin	2	2	0	20	10	11	136	203	101	6	3	0
WEST NORTH CENTRAL												
Minnesota	9	4	1	----	1	1	2	24	8	2	0	0
Iowa	0	1	2	----	----	----	2	2	15	0	3	2
Missouri	1	0	2	1	1	----	19	7	7	4	2	0
North Dakota	0	4	0	----	4	4	0	8	7	0	1	0
South Dakota	0	0	0	----	----	----	0	4	2	0	1	0
Nebraska	2	3	1	1	3	----	20	4	2	0	0	0
Kansas	1	2	2	----	----	----	3	9	9	1	5	0
SOUTH ATLANTIC												
Delaware	0	1	0	----	----	----	0	1	0	0	2	0
Maryland [2]	5	2	2	----	1	1	3	17	9	3	11	3
District of Columbia	0	0	0	----	----	----	4	6	6	0	2	1
Virginia	5	2	6	24	58	43	13	43	33	3	8	1
West Virginia	2	5	5	4	1	7	4	6	4	2	1	0
North Carolina	8	17	13	1	2	----	8	9	5	1	3	1
South Carolina	7	14	9	102	118	118	5	2	3	0	1	0
Georgia	11	13	12	2	10	8	1	9	5	1	3	0
Florida	5	1	1	4	5	1	4	3	2	6	4	1
EAST SOUTH CENTRAL												
Kentucky	3	2	4	----	1	1	2	11	11	2	0	1
Tennessee	2	5	5	2	2	9	12	7	5	2	2	1
Alabama	13	10	9	11	17	11	3	8	8	5	3	0
Mississippi [2]	9	5	8	----	----	----	----	----	----	1	1	1
WEST SOUTH CENTRAL												
Arkansas	10	4	4	13	5	4	12	2	2	0	1	0
Louisiana	4	10	8	4	8	5	1	22	4	0	2	1
Oklahoma	4	3	3	----	17	11	2	2	2	0	1	0
Texas	39	23	23	292	175	122	44	43	43	7	2	2
MOUNTAIN												
Montana	2	1	1	1	----	1	0	21	10	1	1	0
Idaho	0	0	0	----	----	----	0	17	3	0	0	0
Wyoming	0	1	1	----	2	----	1	9	5	1	0	0
Colorado	2	3	3	25	11	9	4	13	8	1	1	1
New Mexico	1	1	1	1	----	----	0	0	2	0	0	0
Arizona	2	1	1	30	22	9	15	12	3	0	2	0
Utah [2]	0	0	0	----	----	----	23	10	10	0	0	0
Nevada	0	1	0	----	----	----	0	0	0	0	0	0
PACIFIC												
Washington	3	3	1	----	----	----	19	14	20	2	3	0
Oregon	1	8	0	1	----	3	18	12	11	3	2	1
California	19	9	9	9	20	15	170	110	81	11	10	1
Total	203	212	185	564	506	433	777	1,533	1,028	145	160	34
33 weeks	6,760	7,265	7,613	338,678	81,667	151,560	590,958	537,131	466,584	13,089	13,528	1,417

[1] New York City only. [2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended August 19, 1944, and comparison with corresponding week of 1943 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever[3]		
	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43
	Aug. 19, 1944	Aug. 21, 1943		Aug. 19, 1944	Aug. 21, 1943		Aug. 19, 1944	Aug. 21, 1943		Aug. 19, 1944	Aug. 21, 1943	
NEW ENGLAND												
Maine	1	0	0	2	2	2	0	0	0	3	0	0
New Hampshire	6	0	0	0	2	2	0	0	0	0	0	0
Vermont	2	0	0	0	2	1	0	0	0	0	1	0
Massachusetts	30	7	6	46	66	40	0	0	0	3	11	6
Rhode Island	0	8	2	1	2	1	0	0	0	1	0	0
Connecticut	15	47	3	2	6	5	0	0	0	2	1	1
MIDDLE ATLANTIC												
New York	469	42	39	58	66	50	0	0	0	16	7	11
New Jersey	24	0	12	11	11	18	0	0	0	3	6	8
Pennsylvania	108	4	5	38	26	40	0	0	0	4	6	14
EAST NORTH CENTRAL												
Ohio	92	14	14	44	63	34	0	0	0	8	5	10
Indiana	23	1	5	15	8	13	0	0	0	1	2	6
Illinois	34	117	18	26	35	43	0	1	1	4	3	6
Michigan[3]	55	11	16	25	32	32	0	0	1	4	10	8
Wisconsin	11	1	1	53	30	30	0	0	0	0	2	0
WEST NORTH CENTRAL												
Minnesota	38	14	14	11	12	16	0	0	0	0	0	0
Iowa	12	8	7	5	10	10	0	0	1	2	1	1
Missouri	4	14	8	6	7	8	0	0	1	1	5	10
North Dakota	4	1	0	3	4	2	0	0	0	0	0	0
South Dakota	0	0	0	0	6	5	0	0	0	0	0	0
Nebraska	2	5	2	1	2	2	0	0	0	0	0	0
Kansas	7	76	3	6	20	20	0	0	0	6	5	3
SOUTH ATLANTIC												
Delaware	6	0	2	0	2	0	0	0	0	0	0	1
Maryland[3]	30	0	0	15	8	8	0	0	0	1	1	4
District of Columbia	19	0	0	4	4	5	0	0	0	0	1	1
Virginia	66	4	4	13	12	9	0	0	0	3	10	9
West Virginia	12	1	1	25	21	18	0	0	0	3	7	11
North Carolina	48	1	7	28	27	21	0	0	0	4	1	11
South Carolina	1	1	1	6	8	5	0	0	0	7	8	11
Georgia	5	0	1	3	14	9	1	0	0	11	10	21
Florida	8	0	2	2	2	0	0	0	0	6	4	1
EAST SOUTH CENTRAL												
Kentucky	35	22	15	2	6	14	0	0	0	7	22	22
Tennessee	5	2	3	9	8	15	0	0	0	5	9	13
Alabama	7	2	2	8	7	12	0	0	0	3	5	5
Mississippi[3]	6	3	1	8	10	4	0	0	0	6	6	7
WEST SOUTH CENTRAL												
Arkansas	2	8	4	5	6	6	0	0	0	5	8	13
Louisiana	4	6	3	3	5	5	0	0	0	1	8	15
Oklahoma	6	38	2	0	5	5	0	1	0	2	3	9
Texas	4	52	8	22	11	17	0	0	0	41	13	32
MOUNTAIN												
Montana	2	0	0	7	4	4	0	0	0	0	1	0
Idaho	0	1	0	5	182	1	0	0	0	0	0	0
Wyoming	2	0	0	2	1	0	0	0	0	0	0	0
Colorado	3	20	0	7	11	10	0	0	0	2	0	2
New Mexico	0	1	1	0	0	2	0	0	0	0	2	2
Arizona	3	5	0	8	3	1	0	0	0	1	1	2
Utah[3]	2	16	1	11	10	3	0	0	0	2	0	0
Nevada	0	0	0	1	0	0	0	0	0	0	0	0
PACIFIC												
Washington	12	20	4	16	18	8	0	0	0	0	1	3
Oregon	19	11	3	17	14	5	0	0	0	0	2	2
California	16	163	23	70	52	47	0	0	0	2	8	8
Total	1, 260	747	391	650	863	641	1	2	6	170	196	338
33 weeks	6, 269	4, 058	2, 139	147, 592	97, 729	97, 729	300	609	1, 187	3, 257	3, 286	4, 533

[2] Period ended earlier than Saturday.

[3] Including paratyphoid fever cases reported separately as follows: Maine, 2; Massachusetts, 2; Connecticut, 1; New York, 2; Michigan, 1; South Carolina, 1; Georgia, 2; Florida, 2; and Texas, 2.

Telegraphic morbidity reports from State health officers for the week ended August 19, 1944, and comparison with corresponding week of 1943 and 5-year median—Con.

Division and State	Whooping cough			Week ended Aug. 19, 1944								
	Week ended—		Median 1939–43	Dysentery				Encephalitis, infectious	Leprosy	Rocky Mt. spotted fever	Tularemia	Typhus fever
	Aug. 19, 1944	Aug. 21, 1943		Anthrax	Amebic	Bacillary	Unspecified					
NEW ENGLAND												
Maine	4	14	27	0	0	0	0	0	0	0	0	1
New Hampshire	0	0	0	0	0	0	0	0	0	0	0	0
Vermont	32	12	21	0	0	0	0	0	0	0	0	0
Massachusetts	63	50	139	0	0	1	0	0	0	0	0	0
Rhode Island	6	17	13	0	0	0	0	0	0	0	0	0
Connecticut	37	23	32	0	0	2	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	168	241	298	0	3	35	0	0	0	1	0	0
New Jersey	37	132	132	0	0	0	0	0	0	0	0	0
Pennsylvania	56	226	267	0	0	1	0	0	0	2	0	0
EAST NORTH CENTRAL												
Ohio	152	158	158	0	2	0	0	0	0	0	0	1
Indiana	6	32	32	0	1	0	0	0	0	1	0	0
Illinois	94	194	194	0	2	1	0	2	0	0	0	0
Michigan [3]	78	252	252	0	0	14	0	0	0	0	0	0
Wisconsin	179	312	214	0	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL												
Minnesota	44	76	50	0	5	1	0	0	0	0	0	0
Iowa	5	27	26	0	0	0	0	2	0	0	0	0
Missouri	15	33	17	0	0	0	0	0	0	0	0	0
North Dakota	9	13	13	0	0	0	0	0	0	0	0	0
South Dakota	4	38	5	0	0	0	0	0	0	0	0	0
Nebraska	19	6	6	0	0	0	0	0	0	0	0	0
Kansas	24	47	47	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC												
Delaware	1	5	5	0	0	0	0	0	0	0	0	0
Maryland [3]	56	80	57	0	0	0	2	0	0	3	0	0
District of Columbia	7	17	17	0	0	0	0	0	0	0	0	0
Virginia	40	61	50	0	0	0	243	0	0	4	1	1
West Virginia	34	27	27	0	0	0	0	0	0	1	0	0
North Carolina	107	143	92	0	0	0	0	0	0	1	0	25
South Carolina	89	90	53	0	0	1	0	0	0	0	1	4
Georgia	2	9	13	0	0	4	0	0	0	0	0	43
Florida	2	33	16	0	2	0	0	1	0	0	0	26
EAST SOUTH CENTRAL												
Kentucky	60	25	44	0	0	0	0	0	0	1	0	0
Tennessee	20	58	55	0	0	0	8	0	0	0	0	5
Alabama	14	50	22	0	0	0	0	6	0	1	0	34
Mississippi [3]	----	----	----	0	0	0	0	0	0	0	0	1
WEST SOUTH CENTRAL												
Arkansas	22	23	11	0	1	57	0	0	0	0	0	0
Louisiana	9	4	8	0	0	3	0	0	2	0	0	15
Oklahoma	17	2	4	0	0	0	0	0	0	2	0	0
Texas	165	166	126	0	32	410	27	1	0	0	1	73
MOUNTAIN												
Montana	9	31	22	0	0	0	0	1	0	0	0	0
Idaho	4	0	2	0	0	0	0	0	0	0	0	0
Wyoming	0	0	3	0	0	0	0	0	0	0	0	0
Colorado	21	40	25	0	0	1	0	0	0	0	0	0
New Mexico	0	6	14	0	0	6	2	0	0	0	0	0
Arizona	9	11	11	0	0	0	33	0	0	0	0	0
Utah [3]	30	45	48	0	0	0	0	1	0	0	1	0
Nevada	0	1	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	11	42	42	0	0	0	0	0	0	0	0	0
Oregon	8	55	22	0	0	0	0	0	0	0	0	0
California	66	125	170	0	1	9	0	2	0	0	0	1
Total	1,835	3,052	3,063	0	49	546	315	10	2	17	4	230
Same week 1943	3,052	----	----	1	41	573	328	30	0	18	11	148
Same week 1942	3,063	----	----	1	35	274	288	22	1	8	13	149
33 weeks 1944	63,152	----	----	30	1,111	13,994	5,184	372	20	365	379	2,729
33 weeks 1943	131,916	----	----	41	1,351	10,255	4,626	428	18	348	590	2,202
33 weeks 1942	122,382	----	[4] 126,631	57	717	5,594	4,315	321	35	[4] 378	650	[4] 1,819

[3] Period ended earlier than Saturday.

[4] 5-year median 1939–43.

WEEKLY REPORTS FROM CITIES

City reports for week ended August 5, 1944

This table lists the reports from 86 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	------	0	1	0	2	0	3	0	1	0
New Hampshire:												
Concord	0	0	------	0	0	0	0	0	0	0	0	0
Massachusetts:												
Boston	1	0	------	1	25	6	7	2	17	0	2	15
Fall River	0	0	------	0	0	0	2	0	0	0	0	0
Springfield	0	0	------	0	5	1	2	0	0	0	0	2
Worcester	0	0	------	0	0	0	5	0	1	0	1	1
Rhode Island:												
Providence	0	0	------	0	0	0	1	0	0	0	1	1
Connecticut:												
New Haven	0	0	------	0	0	0	0	0	0	0	0	3
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	0	1	0	8	64	2	0	0	0
New York	5	1	------	0	24	12	41	67	18	0	4	63
Rochester	0	0	------	0	11	1	3	4	0	0	0	13
Syracuse	0	0	------	0	1	0	1	4	0	0	0	1
New Jersey:												
Camden	0	0	------	0	0	0	0	0	1	0	0	0
Newark	0	0	------	0	4	1	2	0	0	0	0	9
Trenton	0	0	------	0	0	0	1	0	1	0	0	0
Pennsylvania:												
Philadelphia	1	0	------	0	2	1	13	15	13	0	1	12
Pittsburgh	0	0	3	3	0	3	6	15	5	0	0	4
Reading	1	0	------	0	1	0	0	0	0	0	0	1
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	------	0	0	1	1	4	8	0	0	6
Cleveland	1	0	------	1	1	3	3	23	9	0	0	17
Columbus	0	0	------	0	0	0	1	1	1	0	0	11
Indiana:												
Fort Wayne	0	0	------	0	0	0	1	1	0	0	0	0
Indianapolis	7	0	------	0	1	3	5	5	2	0	0	6
South Bend	0	0	------	0	0	0	0	0	0	0	0	0
Terre Haute	0	0	------	0	0	0	2	0	0	0	0	2
Illinois:												
Chicago	1	0	------	0	10	1	16	8	14	0	2	51
Springfield	0	0	------	0	0	0	1	0	0	0	0	0
Michigan:												
Detroit	4	0	------	0	4	3	5	24	17	0	3	51
Flint	0	0	------	0	0	0	1	2	1	0	0	0
Wisconsin:												
Kenosha	0	0	------	0	1	0	0	0	0	0	0	37
Milwaukee	0	0	------	0	7	0	1	0	4	0	0	35
Racine	0	0	------	0	12	0	0	0	0	0	0	16
Superior	0	0	------	0	4	0	0	0	1	0	0	0
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	3	0	0	0	6	0	0	2
Minneapolis	0	0	------	0	3	1	2	3	1	0	0	2
St. Paul	1	0	------	0	0	2	3	9	0	0	0	8
Missouri:												
Kansas City	0	0	------	1	0	0	4	1	2	0	0	0
St. Joseph	0	0	------	0	2	0	0	0	1	0	0	0
St. Louis	0	0	------	0	14	5	4	2	2	0	0	13

City reports for week ended August 5, 1944—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo	0	0	------	0	0	0	2	0	0	0	0	0
Nebraska:												
Omaha	1	0	------	0	2	0	2	4	0	0	0	0
Kansas:												
Topeka	0	0	------	0	1	0	2	0	1	0	0	2
Wichita	0	0	------	0	2	0	2	0	0	0	0	3
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	0	0	0	2	1	0	0	1
Maryland:												
Baltimore	3	0	1	0	2	0	13	12	3	0	0	92
Cumberland	0	0	------	0	0	0	0	0	0	0	0	0
Frederick	0	0	------	0	0	0	1	0	0	0	0	0
District of Columbia:												
Washington	0	1	------	0	7	1	4	9	4	0	0	0
Virginia:												
Lynchburg	2	0	------	0	0	0	0	15	2	0	0	1
Richmond	0	0	------	0	0	1	0	0	1	0	0	2
Roanoke	0	0	------	0	0	0	2	2	0	0	0	0
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	0	0	0	0
Wheeling	0	0	------	0	0	0	1	0	0	0	0	0
North Carolina:												
Raleigh	0	0	------	0	0	0	0	0	0	0	0	0
Wilmington	0	0	------	0	0	0	1	0	0	0	0	10
Winston-Salem	0	0	------	0	0	0	0	0	1	0	0	2
South Carolina:												
Charleston	0	0	------	0	0	0	1	0	2	0	0	0
Georgia:												
Atlanta	0	0	3	0	2	0	0	1	3	0	0	3
Brunswick	0	0	------	0	0	1	1	0	1	0	0	0
Savannah	0	0	------	0	0	0	0	0	0	0	0	0
Florida:												
Tampa	0	0	1	0	0	2	0	3	0	0	0	1
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	1	0	1	0	10	0	1	0	0	10
Nashville	0	0	------	0	2	0	0	1	1	0	0	2
Alabama:												
Birmingham	0	0	------	0	1	1	6	0	1	0	1	0
Mobile	1	0	------	1	0	1	1	0	0	0	1	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	0	0	0	1	0	0	0	0	4
Louisiana:												
New Orleans	0	0	3	0	6	0	11	0	1	0	1	0
Shreveport	0	0	------	0	0	0	4	1	1	0	1	0
Texas:												
Dallas	1	0	------	0	0	0	4	2	0	0	0	1
Galveston	0	0	------	0	0	0	3	0	1	0	0	0
Houston	0	0	------	0	0	1	3	1	3	0	1	0
San Antonio	0	0	------	0	0	0	3	0	1	0	0	0
MOUNTAIN												
Montana:												
Billings	0	0	------	0	0	0	0	0	0	0	0	3
Great Falls	0	0	------	0	0	0	0	0	8	0	0	0
Helena	0	0	------	0	0	0	0	0	0	0	0	0
Missoula	0	0	------	0	0	0	0	0	0	0	0	0
Idaho:												
Boise	2	0	------	0	0	0	0	0	0	0	0	0
Colorado:												
Denver	2	0	1	0	1	0	4	0	5	0	0	17
Pueblo	0	0	------	0	0	0	0	0	1	0	0	0
Utah:												
Salt Lake City	0	0	------	0	5	0	0	0	6	0	0	19

City reports for week ended August 5, 1944—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	0	0	------	0	4	0	2	0	5	0	0	2
Spokane	2	0	------	0	7	1	2	1	2	0	0	2
Tacoma	0	0	------	0	1	0	0	0	2	0	0	4
California:												
Los Angeles	1	0	2	1	48	1	7	1	12	0	1	13
Sacramento	0	0	------	0	14	0	4	0	3	0	0	10
San Francisco	0	0	------	0	54	5	3	1	2	0	0	2
Total	37	2	15	8	297	59	244	310	205	0	[2] 21	588
Corresponding week, 1943	27	------	29	4	676	------	215	------	203	0	25	1,153
Average, 1939–43	43	------	31	[1] 6	[2] 515	------	[1] 237	------	204	1	41	1,234

[1] 3-year average, 1941–43.
[2] 5-year median.

Dysentery, amebic.—Cases: New York, 1; Columbus, 1; Sacramento, 1.
Dysentery, bacillary.—Cases: Buffalo, 3; New York, 2; St. Louis, 1; Charleston, S. C., 12; Atlanta, 1; Nashville, 1; Shreveport, 5; Los Angeles, 2.
Dysentery, unspecified.—Cases: Richmond, 12; Atlanta, 1.
Leprosy.—Cases: New Orleans, 1.
Rocky Mountain spotted fever.—Cases: St. Louis, 2; Richmond, 1.
Tularemia.—Cases: St. Louis, 2; Nashville, 1.
Typhus fever, endemic.—Cases: New York, 1; Wilmington, N. C., 2; Winston-Salem, 1; Charleston, S. C., 6; Atlanta, 1; Brunswick, 1; Savannah, 3; Tampa, 5; Mobile, 2; New Orleans, 2; Dallas, 2; Houston, 7; San Antonio, 3; Los Angeles, 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 86 cities in the preceding table (estimated population, 1943, 33,904,900)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	3.1	0.0	0.0	3.1	97	22.0	59.7	6.3	66	0.0	15.7	69
Middle Atlantic	3.2	0.5	1.4	1.4	20	8.3	34.7	78.2	19	0.0	2.3	48
East North Central	8.0	0.0	0.0	0.6	25	6.8	22.9	42.1	35	0.0	3.1	144
West North Central	4.0	0.0	0.0	2.0	54	15.9	41.8	37.8	26	0.0	0.0	60
South Atlantic	8.2	1.6	8.2	0.0	18	8.2	39.2	71.9	29	0.0	0.0	183
East South Central	5.9	0.0	5.9	5.9	24	11.8	100.3	5.9	18	0.0	11.8	71
West South Central	2.9	0.0	8.6	0.0	17	2.9	83.2	11.5	20	0.0	8.6	14
Mountain	31.8	0.0	7.9	0.0	48	0.0	31.8	0.0	159	0.0	0.0	310
Pacific	4.7	0.0	3.2	1.6	202	11.1	28.5	4.7	41	0.0	1.6	52
Total	5.7	0.3	2.3	1.2	46	9.1	37.6	47.8	32	0.0	3.2	91

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (human).—On July 22, 1944, 1 death from bubonic plague (diagnosis confirmed) was reported in the Hamakua District, Island of Hawaii, T. H. This death occurred about 5½ miles from the locality of the last previously reported death. Four deaths from plague have previously been reported this year, occurring on January 19, January 26, February 10, and March 10, 1944, respectively.

FOREIGN REPORTS

CANARY ISLANDS

Malaria.—According to information dated July 11, 1944, from the American Consul at Las Palmas, malaria has become prevalent in the southern part of Grand Canary Island. For the week ended July 1, 1944, 64 cases of malaria were reported, and the total number of cases reported for the year 1943 amounted to 2,237 among the civilians and 500 cases among the military population. The disease is said to be of a mild character, but it is stated that there is danger of its spreading.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Health, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place		January–May 1944	June 1944	July 1944—week ended—				
				1	8	15	22	29
ASIA								
Ceylon	C	2						
India	C	79,584	29,669					
Calcutta	C	2,062	549	74	41			
Chittagong	C	63						
Madras	C	36						
Negapatam	C	17						

PLAGUE

[C indicates cases; D, deaths; P, present]

AFRICA								
Belgian Congo	C	3	1					
Plague-infected rats		P						
British East Africa:								
Kenya	C	1		1	1			
Uganda	C	4	1					
Egypt	C	518	79	7	27	7		
Port Said	C	13	22	5	12	5		
Suez	C	152	5					
French West Africa: **Dakar**	C	16	35			[1] 30		
Madagascar	C	65						
Morocco (French)	C	57	13				6	
Rhodesia, northern	C	1			1			
Senegal	C		2					
Union of South Africa	C	23						
ASIA								
China: **Foochow**	C	P						
India	C	6,718	42					
Indochina	C	49	6					
Palestine	C	1		1			1	

[1] For the period July 1–10, 1944.

PLAGUE—Continued

Place		January–May 1944	June 1944	July 1944—week ended— 1	8	15	22	29
EUROPE								
Portugal: Azores	C	7	2	1		1		
SOUTH AMERICA								
Bolivia:								
Chuquisaca Department	C	4						
Tarija Department	C		6					
Ecuador: Chimborazo Department	C	1						
Peru:								
Ancash Department	C	44	16					
Lambayeque Department	C	1						
Libertad Department	C	5						
Lima Department	C	17						
Piura Department	C	2						
OCEANIA								
Hawaii Territory:								
Hamakua District	D	[2] 4					1	
Plague-infected rats [3]		[4] 41	1		2			

[2] Includes 1 death from pneumonic plague.
[3] 53 fleas were also proved positive for plague on Mar. 7, 1944.
[4] Includes 12 plague-infected mice.

SMALLPOX

[C indicates cases; D, deaths; P, present]

AFRICA								
Algeria	C	595	83					
Angola	C	20						
Basutoland	C	130						
Belgian Congo	C	993	153	21	54			
British East Africa:								
Kenya	C	2,483	147	54	42	25		
Mombasa	C	135	7			1		
Tanganyika	C	977	685	42	217			
Uganda	C	1,874	381	149	172	119		
Cameroon (French)	C	348						
Dahomey	C	59	6					
Egypt	C	9,426	468	133	128			
French Equatorial Africa	C	837						
French Guinea	C	482	284					
French West Africa: Dakar	C	11	14					
Gambia	C	13						
Gold Coast	C	5						
Ivory Coast	C	385						
Mauritania	C		1					
Morocco (French)	C	592						
Mozambique	C	1						
Nigeria	C	2,620	401	74	43			
Niger Territory	C	518	23					
Senegal	C	122	25					
Sierra Leone	C	393						
Sudan (Anglo-Egyptian)	D		1					
Sudan (French)	C	1,821	44					
Tunisia	C	5						
Union of South Africa	C	52	62	19	15	15		
ASIA								
Arabia	C	[1] 9						
Ceylon	C	8						
China: Kunming (Yunnan Fu)	C	40	3	1	7	1		
India	C	178,969	20,030					
Indochina	C	1,381	136					
Iran	C	1						
Iraq	C	27	4		1			
Palestine	C	104	32	15		7		
Syria and Lebanon	C	170	3	3				

[1] Includes 4 imported cases

SMALLPOX—Continued

Place		January–May 1944	June 1944	July 1944—week ended— 1	8	15	22	29
EUROPE								
Gibraltar	C	P						
Great Britain	C	[2] 16	1		1			
Greece	C	317						
Italy	C	142	133					
Portugal	C	14	13	1			2	
Spain	C	131	16					
Turkey	C	5,550						
NORTH AMERICA								
Guatemala	C	1	3					
Honduras	C	8	1					
Mexico	C	1,484	211					
SOUTH AMERICA								
Bolivia	C	237	135					
Brazil	C	61	38	15	22	16	25	
Colombia	C	209	18	12	9	10	8	
Ecuador	C	4						
Peru	C	178						
Lima	C	19						
Venezuela	C	143	47					

[2] Includes 1 imported case from the Middle East.

TYPHUS FEVER

[C indicates cases]

AFRICA								
Algeria	C	725	126					
Basutoland	C	4						
Belgian Congo	C	7	3					
British East Africa: Kenya	C	7						
Egypt	C	12,297	1,280	485	284			
French West Africa: **Dakar**	C	15	1					
Gold Coast	C		4					
Morocco (French)	C	1,608						
Morocco (Spanish)	C	6						
Mozambique	C	2						
Nigeria	C	2						
Rhodesia, northern	C	17	23					
Sierra Leone	C	30						
Tunisia	C	520	56					
Union of South Africa	C	4,184	51	26				
ASIA								
Arabia: Western Aden Protectorate	C	[1] 15						
Ceylon	C			1				
China: Kunming (Yunnan Fu)	C	39	6	3	2		4	
India	C	3	3					
Indochina	C	867	108					
Iran	C	5,747						
Iraq	C	496	40					
Palestine	C	357	29	7	16	3		
Syria and Lebanon	C	389	33					
Trans-Jordan	C	24						
EUROPE								
Belgium	C	8	1					
Bulgaria	C	624						
France	C	6						
Greece	C	146						
Hungary	C	2,231	505	101		[2] 159		
Irish Free State	C	3	3				1	
Netherlands	C	8						
Norway	C	1						
Portugal	C	1	1	2				
Rumania	C	5,178						
Slovakia	C	308	8					
Spain	C	391	10					
Turkey	C	2,076						
Yugoslavia	C	5,055	1,209					

[1] A report dated Mar. 30, 1944, states that an estimated 800 deaths from typhus fever have been reported in Western Aden Protectorate, Arabia.

TYPHUS FEVER—Continued

Place		January–May 1944	June 1944	July 1944—week ended— 1	8	15	22	29
NORTH AMERICA[3]								
Costa Rica	C	2						
Dominican Republic	C	4	6					
Guatemala	C	1,194	176					
Jamaica	C	26	13	2				
Mexico	C	950	105					
Panama Canal Zone	C	1						
Puerto Rico (endemic)	C	54	28	10	8	18	5	
Salvador	C	3	1					
Virgin Islands	C	2						
SOUTH AMERICA								
Bolivia	C	69	39					
Brazil	C	1	1					
Chile	C	166	46					
Colombia	C	82	24					
Curacao	C	1			1			
Ecuador	C	150						
Peru	C	304						
Venezuela	C	34	12					
OCEANIA								
Australia	C	91	35	2	3	1		
Hawaii Territory	C	28	6		2	2		

[2] For 2 weeks.
[3] Cases of typhus fever listed in this area are probably of endemic type.

YELLOW FEVER

[C indicates cases; D, deaths]

AFRICA								
Belgian Congo:								
Bebeyru	D	1						
Bondo	D	1						
Leopoldville	C	1						
Gold Coast:								
Kintampo	C	[1] 1						
Tamale	C	[1] 1						
Ivory Coast	C				[1] 1			
EUROPE								
Portugal: Lisbon.[2]								
SOUTH AMERICA								
Bolivia:								
La Paz Department	C	1						
Santa Cruz Department	C	3						
Brazil:								
Acre Territory	D	1						
Matto Grosso State	D	3						
Para State	D	2						
Colombia:								
Boyaca Department	D	2						
Caldas Department	D	1						
Cundinamarca Department	D	1						
Santander Department	D	4						

[1] Suspected.
[2] According to information dated Jan. 21, 1944, it is reported that a vessel which called at the islands of Sao Tome and Cape Verde arrived at Lisbon, Portugal, with cases of yellow fever on board.

FEDERAL SECURITY AGENCY

UNITED STATES PUBLIC HEALTH SERVICE

THOMAS PARRAN, *Surgeon General*

DIVISION OF PUBLIC HEALTH METHODS

G. ST. J. PERROTT, *Chief of Division*

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